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A large-scale relativistic configuration-interaction calculation of the $3s^2\ ^1S_0 - 3s3p\ ^{1,3}P_1$ transition energies in magnesiumlike ions [1] K. T. CHENG, M. H. CHEN, *Lawrence Livermore National Laboratory, Livermore, CA 94550* — We have calculated the $3s^2\ ^1S_0 - 3s3p\ ^{1,3}P_1$ transition energies for neutral magnesium and Mg-like Ar^{6+}, Cu^{17+}, Kr^{24+}, and Mo^{30+} using the relativistic configuration-interaction (CI) method. These calculations are based on the relativistic no-pair Hamiltonian which includes Coulomb and retarded Breit interactions and employ finite B-spline basis functions. Quantum electrodynamic and mass polarization corrections are also calculated. For Mg-like ions studied here, intravalence correlations are treated exactly by saturating the basis with all configurations that arise from valence-valence excitations. Contributions from core polarization are also calculated with large-scale CI expansions by including dominant configurations from core-valence excitations. Agreement between theory and experiment are good for all the Mg-like ions studied here.

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